

WHAT IS CLAIMED IS:

1. An image reading apparatus comprising:
 - a light source for illuminating a document;
 - an image sensing element for outputting an
 - 5 electrical signal in accordance with an input light quantity;
 - a first reference member;
 - a second reference member;
 - a timer for measuring a time since said light
 - 10 source is turned on; and
 - control means for determining whether the time measured by said timer reaches a predetermined time, in a case that the predetermined time has not elapsed, acquiring shading correction data by a first method
 - 15 using said first reference member, and in a case that the predetermined time has elapsed, acquiring shading correction data by a second method using said second reference member.
2. The apparatus according to claim 1, wherein
 - 20 in the first method, a coefficient for uniformly changing level of the shading correction data is generated on the basis of data obtained by illuminating said first reference member by said light source and scanning said first reference member by said image
 - 25 sensing element, and
 - in the second method, shading correction data of

each pixel in a main scanning direction is generated by illuminating said second reference member by said light source and scanning said second reference member by said image sensing element.

5 3. The apparatus according to claim 1, further comprising correction means which uses the shading correction data to perform shading correction on the electrical signal output from said image sensing element.

10 4. The apparatus according to claim 1, wherein said first and second reference members comprise white plates.

5. The apparatus according to claim 4, wherein
said first reference member is set at an end
15 portion of a main scanning direction at a predetermined position of a subscanning direction, and

said second reference member is set in the main scanning direction at a predetermined position in the subscanning direction.

20 6. The apparatus according to claim 1, wherein determination by said control means is performed before each document sheet is read.

7. The apparatus according to claim 6, further comprising a document feeder capable of successively
25 supplying a plurality of document sheets,
wherein said control means performs the

determination in a case that said document feeder supplies each document sheet to a predetermined position.

8. The apparatus according to claim 1, wherein in a case that a first document sheet is to be read after said light source is turned on, said control means acquires shading correction data using said second reference member before start of read of the document sheet.

9. The apparatus according to claim 8, wherein in a case that a first document sheet is to be read after said light source is turned on, and the predetermined time has not elapsed, said control means skips acquisition of shading correction data using said first reference member.

10. The apparatus according to claim 1, wherein the predetermined time is a time elapsed until a pixel value of said image sensing element for outputting a maximum signal value changes to a predetermined rate since said light source is turned on.

11. A control apparatus for an image reading unit having a light source for illuminating a document, an image sensing element for outputting an electrical signal in accordance with an input light quantity, a first reference member, and a second reference member, comprising:

a timer for measuring a time since the light source is turned on; and

control means for determining whether the time measured by said timer reaches a predetermined time, in
5 a case that the predetermined time has not elapsed, acquiring shading correction data by a first method using the first reference member, and in a case that the predetermined time has elapsed, acquiring shading correction data by a second method using the second
10 reference member.

12. A hybrid apparatus comprising:

a light source for illuminating a document;
an image sensing element for outputting an electrical signal in accordance with an input light
15 quantity;
a first reference member;
a second reference member;
a timer for measuring a time since said light source is turned on;

20 control means for determining whether the time measured by said timer reaches a predetermined time, in a case that the predetermined time has not elapsed, acquiring shading correction data by a first method using said first reference member, and in a case that
25 the predetermined time has elapsed, acquiring shading correction data by a second method using said second

reference member;

correction means for correcting the electrical signal output from said image sensing element, and outputting an image signal; and

5 print means for printing an image of the document on a print medium on the basis of the image signal corrected by said correction means,

wherein said correction means performs shading correction using at least the shading correction data.

10 13. The apparatus according to claim 12, further comprises:

output means for outputting the electrical signal corrected by said correction means to an external device via a communication line; and

15 input means for inputting an image signal from the external device via the communication line,

wherein said print means prints an image on a print medium on the basis of the image signal input via said input means.

20 14. A facsimile apparatus comprising:

a light source for illuminating a document;

an image sensing element for outputting an electrical signal in accordance with an input light quantity;

25 a first reference member;

a second reference member;

a timer for measuring a time since said light source is turned on;

control means for determining whether the time measured by said timer reaches a predetermined time, in
5 a case that the predetermined time has not elapsed, acquiring shading correction data by a first method using said first reference member, and in a case that the predetermined time has elapsed, acquiring shading correction data by a second method using said second
10 reference member;

correction means for correcting the electrical signal output from said image sensing element, and outputting an image signal;

output means for outputting the electrical signal
15 corrected by said correction means to an external device via a communication line;

input means for inputting an image signal from the external device via the communication line; and

print means for printing an image on a print
20 medium on the basis of the image signal input via said input means,

wherein said correction means performs shading correction using at least the shading correction data.

15. A control method for an image reading unit having
25 a light source for illuminating a document, an image sensing element for outputting an electrical signal in

accordance with an input light quantity, a first reference member, and a second reference member, comprising:

5 a measurement step of measuring a time since the light source is turned on;

a determination step of determining whether the time measured in said measurement step reaches a predetermined time;

10 a first acquisition step of acquiring shading correction data using the first reference member in a case that the predetermined time has not elapsed; and

a second acquisition step of acquiring shading correction data using the second reference member in a case that the predetermined time has elapsed.

15 16. The method according to claim 15, wherein

said first acquisition step comprises generating a coefficient for uniformly changing level of the shading correction data on the basis of data obtained by illuminating the first reference member by the light source and scanning the first reference member by the image sensing element, and

20 said second acquisition step comprises generating shading correction data of each pixel in a main scanning direction by illuminating the second reference member by the light source and scanning the second reference member by the image sensing element.

17. The method according to claim 15, further comprising a correction step of performing shading correction on the electrical signal output from the image sensing element by using the shading correction
5 data.

18. The method according to claim 15, wherein the first and second reference members comprise white plates.

19. The method according to claim 18, wherein
10 the first reference member is set at an end portion of a main scanning direction at a predetermined position of a subscanning direction of a document, and the second reference member is set in the main scanning direction at a predetermined position in the
15 subscanning direction.

20. The method according to claim 15, wherein said determination step and said first or second acquisition step are performed before each document sheet is read.

21. The method according to claim 20, wherein
20 the image reading unit further comprises a document feeder capable of successively supplying a plurality of document sheets, and said determination step and said first or second acquisition step are performed in a case that the
25 document feeder supplies each document sheet to a predetermined position.

22. The method according to claim 15, wherein
the method further comprises a document
determination step of determining whether a document
sheet is a first document sheet after the light source
5 is turned on, and

in a case that the document sheet is determined
in said document determination step to be the first
document sheet, said second acquisition step is
executed before start of read of the document sheet
10 regardless of a determination result in said
determination step.

23. The method according to claim 22, wherein in a
case that the document sheet is determined in said
document determination step to be the first document
15 sheet, said first acquisition step is skipped
regardless of the determination result in said
determination step.

24. The method according to claim 15, further
comprising a step of measuring a time until a pixel
20 value of the image sensing element for outputting a
maximum signal value changes to a predetermined rate
since the light source is turned on,

wherein the measured time is used as the
predetermined time.

25. A computer program product comprising a computer
usable medium having computer readable program code

means embodied in said medium for a control method for
an image reading unit having a light source for
illuminating a document, an image sensing element for
outputting an electrical signal in accordance with an
5 input light quantity, a first reference member, and a
second reference member, said product including:

first computer readable program code means for
measuring a time since the light source is turned on;

10 second computer readable program code means for
determining whether the time measured in the
measurement step reaches a predetermined time;

third computer readable program code means for
acquiring shading correction data using the first
reference member in a case that the predetermined time
15 has not elapsed; and

fourth computer readable program code means for
acquiring shading correction data using the second
reference member in a case that the predetermined time
has elapsed.